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<110> Morphotek, Inc.
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Kline, J. Bradford
Nicolaides, Nicholas C.
Sass, Philip M.

<120> Methods for Generating Enhanced Antibody-Producing Cell Lines with Improved Growth Characteristics

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<141> 2003-07-21

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Leu Ser Gly Met Leu Asp Val His His Cys Ser Thr Leu Ser Ser Trp
                245                 250                 255

Val Leu Leu Met Asp Tyr Ala Gly Asn Ala Ser Ala Val Phe Leu Leu
            260                 265                 270

Pro Glu Asp Gly Lys Met Gln His Leu Glu Gln Thr Leu Asn Lys Glu
        275                 280                 285

Leu Ile Ser Lys Ile Leu Leu Asn Arg Arg Arg Arg Leu Val Gln Ile
    290                 295                 300

His Ile Pro Arg Leu Ser Ile Ser Gly Glu Tyr Asn Leu Lys Thr Leu
305                 310                 315                 320

Met Ser Pro Leu Gly Ile Thr Arg Ile Phe Asn Asn Gly Ala Asp Leu
                325                 330                 335

Ser Gly Ile Thr Glu Glu Asn Ala Pro Leu Lys Leu Ser Lys Ala Val
            340                 345                 350

His Lys Ala Val Leu Thr Ile Asp Glu Thr Gly Thr Glu Ala Ala Ala
        355                 360                 365

Ala Thr Val Phe Glu Ala Val Pro Met Ser Met Pro Pro Ile Leu Arg
    370                 375                 380

Phe Asp His Pro Phe Leu Phe Ile Ile Phe Glu Glu His Thr Gln Ser
385                 390                 395                 400

Pro Ile Phe Val Gly Lys Val Val Asp Pro Thr His Lys
                405                 410
```

<210> 22
<211> 382
<212> PRT
<213> Rattus norvegicus

<400> 22

```
Ala Pro Ser His Gly Gly Ser Cys Phe Trp Gln Pro Cys Val Ala Trp
1               5                   10                  15

Pro Pro Ala Ser Trp Leu Arg Met Pro Arg Lys Pro Ile Pro Pro Ser
            20                  25                  30

Arg Thr Arg Val Gln Pro Thr Val Arg Phe Leu Gln Thr Trp Gln Thr
        35                  40                  45
```

Leu Pro Ser Ala Tyr Thr Gly Ser Trp Ser Ile Asn Pro Ile His Pro
50 55 60

Thr Ser Ser Ser Pro Leu Ala Ser Pro Gln Pro Ser Pro Cys Ser Pro
65 70 75 80

Trp Gly Ala Arg Val Thr Leu Ala Asn Arg Phe Arg Ala Trp Ser Ser
85 90 95

Thr Ser His Arg Tyr Leu Arg Leu Thr Ser Thr Arg Pro Ser Ile Thr
100 105 110

Ser Ser Lys Leu Ser Thr Gly Gln Thr Val Ser Cys Ser Thr Gln Ala
115 120 125

Met Ala Ser Leu Ser Thr Arg Ile Ser Trp Trp Arg Ser Phe Trp Lys
130 135 140

Arg Ser Arg Thr Ile Thr Thr Gln Lys Pro Ser Leu Ser Thr Leu Pro
145 150 155 160

Thr Gln Lys Arg Leu Arg Lys Leu Met Ile Met Arg Arg Glu Pro Lys
165 170 175

Glu Arg Leu Ile Asn Ser Trp Thr Lys Thr Arg Phe Leu Pro Trp Ile
180 185 190

Thr Phe Ser Leu Lys Ala Ser Gly Arg Gly His Ser Ile Leu Ser Thr
195 200 205

Leu Gly Met Leu Thr Phe Thr Thr Ser Pro Pro Gln Arg Cys Pro Thr
210 215 220

Ala Trp Ala Cys Leu Thr Cys Thr Ile Ala Ala His Cys Pro Ala Gly
225 230 235 240

Cys Trp Ile Thr Trp Ala Thr Pro Leu Pro Ser Ser Ser Cys Pro Met
245 250 255

Met Ala Arg Cys Ser Ile Trp Ser Lys Leu Ser Pro Arg Ile Ser Phe
260 265 270

Pro Gly Ser Cys Thr Gly Lys Gln Gly Gln Pro Phe Ser Thr Ser Pro
275 280 285

Asn Cys Pro Ser Leu Glu Pro Ile Thr Arg His Ser Ala His Trp Ala
290 295 300

```
Ser Pro Gly Ser Ser Thr Met Met Leu Ile Ser Leu Glu Ser Gln Arg
305                 310                 315                 320

Met Pro Pro Ser Leu Ala Arg Leu Cys Ile Arg Leu Cys Pro Met Arg
                325                 330                 335

Gly Glu Gln Arg Leu Gln Glu Pro Leu Trp Trp Arg Pro Ser Pro Cys
            340                 345                 350

Leu Cys Pro Leu Lys Ser Ser Thr Thr Leu Ser Phe Ser Leu Asn Gln
        355                 360                 365

Lys Leu Arg Ala Pro Ser Leu Trp Glu Lys Ile Pro His Val
    370                 375                 380
```

<210> 23
<211> 417
<212> PRT
<213> Homo sapiens

<400> 23

```
Met Pro Ser Ser Val Ser Trp Gly Ile Leu Leu Ala Gly Leu Cys Cys
1               5                   10                  15

Leu Val Pro Val Ser Leu Ala Glu Asp Pro Gln Gly Asp Ala Ala Gln
            20                  25                  30

Lys Thr Asp Thr Ser His His Asp Gln Asp His Pro Thr Phe Asn Lys
        35                  40                  45

Ile Thr Pro Asn Leu Ala Glu Phe Ala Phe Ser Leu Tyr Arg Gln Leu
    50                  55                  60

Ala His Gln Ser Asn Ser Thr Asn Ile Phe Phe Ser Pro Val Ser Ile
65                  70                  75                  80

Ala Thr Ala Phe Ala Met Leu Ser Leu Gly Thr Lys Ala Asp Thr His
                85                  90                  95

Asp Glu Ile Leu Glu Gly Leu Asn Phe Asn Leu Thr Glu Ile Pro Glu
            100                 105                 110

Ala Gln Ile His Glu Gly Phe Gln Glu Leu Leu Arg Thr Leu Asn Gln
        115                 120                 125

Pro Asp Ser Gln Leu Gln Leu Thr Thr Gly Asn Gly Leu Phe Leu Ser
    130                 135                 140

Glu Gly Leu Lys Leu Val Asp Lys Phe Leu Glu Asp Val Lys Lys Leu
```

```
145                 150                 155                 160

Tyr His Ser Glu Ala Phe Thr Val Asn Phe Gly Asp His Glu Glu Ala
                165                 170                 175

Lys Lys Gln Ile Asn Asp Tyr Val Glu Lys Gly Thr Gln Gly Lys Ile
            180                 185                 190

Val Asp Leu Val Lys Glu Leu Asp Arg Asp Thr Val Phe Ala Leu Val
        195                 200                 205

Asn Tyr Ile Phe Phe Lys Gly Lys Trp Glu Arg Pro Phe Glu Val Lys
    210                 215                 220

Asp Thr Glu Asp Glu Asp Phe His Val Asp Gln Val Thr Thr Val Lys
225                 230                 235                 240

Val Pro Met Met Lys Arg Leu Gly Met Phe Asn Ile Gln His Cys Lys
                245                 250                 255

Lys Leu Ser Ser Trp Val Leu Leu Met Lys Tyr Leu Gly Asn Ala Thr
            260                 265                 270

Ala Ile Phe Phe Leu Pro Asp Glu Gly Lys Leu Gln His Leu Glu Asn
        275                 280                 285

Glu Leu Thr His Asp Ile Ile Thr Lys Phe Leu Glu Asn Glu Asp Arg
    290                 295                 300

Arg Ser Ala Ser Leu His Leu Pro Lys Leu Ser Ile Thr Gly Thr Tyr
305                 310                 315                 320

Asp Leu Lys Ser Val Leu Gly Gln Leu Gly Ile Thr Lys Val Phe Ser
                325                 330                 335

Asn Gly Ala Asp Leu Ser Gly Val Thr Glu Glu Ala Pro Leu Lys Leu
            340                 345                 350

Ser Lys Ala Val His Lys Ala Val Leu Thr Ile Asp Glu Lys Gly Thr
        355                 360                 365

Glu Ala Ala Gly Ala Met Phe Leu Glu Ala Ile Pro Met Ser Ile Pro
    370                 375                 380

Pro Glu Val Lys Phe Asn Lys Pro Phe Val Phe Leu Met Ile Glu Gln
385                 390                 395                 400

Asn Thr Lys Ser Pro Leu Phe Met Gly Lys Val Val Asn Pro Thr Gln
                405                 410                 415
```

Lys

<210> 24
<211> 416
<212> PRT
<213> Ovis aries

<400> 24

Met Ala Leu Ser Ile Thr Arg Gly Leu Leu Leu Leu Ala Ala Leu Cys
1 5 10 15

Cys Leu Ala Pro Thr Ser Leu Ala Gly Val Leu Gln Gly His Ala Val
20 25 30

Gln Glu Thr Asp Asp Thr Ala His Gln Glu Ala Ala Cys His Lys Ile
35 40 45

Ala Pro Asn Leu Ala Asn Phe Ala Phe Ser Ile Tyr His Lys Leu Ala
50 55 60

His Gln Ser Asn Thr Ser Asn Ile Phe Phe Ser Pro Val Ser Ile Ala
65 70 75 80

Ser Ala Phe Ala Met Leu Ser Leu Gly Ala Lys Gly Asn Thr His Thr
85 90 95

Glu Ile Leu Glu Gly Leu Gly Phe Asn Leu Thr Glu Leu Ala Glu Ala
100 105 110

Glu Ile His Lys Gly Phe Gln His Leu Leu His Thr Leu Asn Gln Pro
115 120 125

Asn His Gln Leu Gln Leu Thr Thr Gly Asn Gly Leu Phe Ile Asn Glu
130 135 140

Ser Ala Lys Leu Val Asp Thr Phe Leu Glu Asp Val Lys Asn Leu His
145 150 155 160

His Ser Lys Ala Phe Ser Ile Asn Phe Arg Asp Ala Glu Glu Ala Lys
165 170 175

Lys Lys Ile Asn Asp Tyr Val Glu Lys Gly Ser His Gly Lys Ile Val
180 185 190

Asp Leu Val Lys Asp Leu Asp Gln Asp Thr Val Phe Ala Leu Val Asn
195 200 205

```
Tyr Ile Ser Phe Lys Gly Lys Trp Glu Lys Pro Phe Glu Val Glu His
    210                 215                 220

Thr Thr Glu Arg Asp Phe His Val Asn Glu Gln Thr Thr Val Lys Val
225                 230                 235                 240

Pro Met Met Asn Arg Leu Gly Met Phe Asp Leu His Tyr Cys Asp Lys
                245                 250                 255

Leu Ala Ser Trp Val Leu Leu Leu Asp Tyr Val Gly Asn Val Thr Ala
            260                 265                 270

Cys Phe Ile Leu Pro Asp Leu Gly Lys Leu Gln Gln Leu Glu Asp Lys
        275                 280                 285

Leu Asn Asn Glu Leu Leu Ala Lys Phe Leu Glu Lys Lys Tyr Ala Ser
    290                 295                 300

Ser Ala Asn Leu His Leu Pro Lys Leu Ser Ile Ser Glu Thr Tyr Asp
305                 310                 315                 320

Leu Lys Thr Val Leu Gly Glu Leu Gly Ile Asn Arg Val Phe Ser Asn
                325                 330                 335

Gly Ala Asp Leu Ser Gly Ile Thr Glu Glu Gln Pro Leu Met Val Ser
            340                 345                 350

Lys Ala Leu His Lys Ala Ala Leu Thr Ile Asp Glu Lys Gly Thr Glu
        355                 360                 365

Ala Ala Gly Ala Thr Phe Leu Glu Ala Ile Pro Met Ser Leu Pro Pro
    370                 375                 380

Asp Val Glu Phe Asn Arg Pro Phe Leu Cys Ile Leu Tyr Asp Arg Asn
385                 390                 395                 400

Thr Lys Ser Pro Leu Phe Val Gly Lys Val Val Asn Pro Thr Gln Ala
                405                 410                 415
```

<210> 25
<211> 353
<212> PRT
<213> Mesocricetus auratus

<400> 25

```
Met Lys Pro Ser Ile Ser Trp Gly Ile Leu Leu Leu Ala Gly Leu Cys
1               5                   10                  15

Cys Leu Val Pro Ser Phe Leu Ala Glu Asp Ala Gln Glu Thr Asp Ala
            20                  25                  30
```

Ser Lys Gln Asp Gln Glu His Gln Ala Cys Cys Lys Ile Ala Pro Asn
35 40 45

Leu Ala Asp Phe Ser Phe Asn His Asn Leu Leu Gln Thr Phe Asn Arg
50 55 60

Pro Asp Asn Glu Leu Gln Leu Thr Thr Gly Asn Gly Leu Phe Ile His
65 70 75 80

Asn Asn Leu Lys Leu Val Asp Lys Phe Leu Glu Glu Val Lys Asn Asp
85 90 95

Tyr His Ser Glu Ala Phe Ser Val Asn Phe Thr Asp Ser Glu Glu Ala
100 105 110

Lys Lys Val Ile Asn Gly Phe Val Glu Lys Gly Thr Gln Gly Lys Ile
115 120 125

Val Asp Leu Val Lys Asp Leu Asp Lys Asp Thr Val Leu Ala Leu Val
130 135 140

Asn Tyr Ile Phe Phe Lys Gly Lys Trp Lys Lys Pro Phe Asp Ala Asp
145 150 155 160

Asn Thr Glu Glu Ala Asp Phe His Val Asp Lys Thr Thr Thr Val Lys
165 170 175

Val Pro Met Met Ser Arg Leu Gly Met Phe Asp Val His Tyr Val Ser
180 185 190

Thr Leu Ser Ser Trp Val Leu Leu Met Asp Tyr Leu Gly Asn Ala Thr
195 200 205

Ala Ile Phe Ile Leu Pro Asp Asp Gly Lys Met Gln His Leu Glu Gln
210 215 220

Thr Leu Asn Lys Glu Ile Ile Gly Lys Phe Leu Lys Asp Arg His Thr
225 230 235 240

Arg Ser Ala Asn Val His Phe Pro Lys Leu Ser Ile Ser Gly Thr Tyr
245 250 255

Asn Leu Lys Thr Ala Leu Asp Pro Leu Gly Ile Thr Gln Val Phe Ser
260 265 270

Asn Gly Ala Asp Leu Ser Gly Ile Thr Glu Asp Val Pro Leu Lys Leu
275 280 285

```
Gly Lys Ala Val His Lys Ala Val Leu Thr Ile Asp Glu Arg Gly Thr
    290                 295                 300

Glu Ala Ala Gly Ala Thr Phe Met Glu Ile Ile Pro Met Ser Val Pro
305                 310                 315                 320

Pro Glu Val Asn Phe Asn Ser Pro Phe Ile Ala Ile Ile Tyr Asp Arg
                325                 330                 335

Gln Thr Ala Lys Ser Pro Leu Phe Val Gly Lys Val Val Asp Pro Thr
            340                 345                 350

Arg
```

<210> 26
<211> 413
<212> PRT
<213> Oryctolagus cuniculus

<400> 26

```
Met Pro Pro Ser Val Ser Arg Ala Leu Leu Leu Leu Ala Gly Leu Gly
1               5                   10                  15

Cys Leu Leu Pro Gly Phe Leu Ala Asp Glu Ala Gln Glu Thr Ala Val
            20                  25                  30

Ser Ser His Glu Gln Asp Arg Pro Ala Cys His Arg Ile Ala Pro Ser
        35                  40                  45

Leu Val Glu Phe Ala Leu Ser Leu Tyr Arg Glu Val Ala Arg Glu Ser
    50                  55                  60

Asn Thr Thr Asn Ile Phe Phe Ser Pro Val Ser Ile Ala Leu Ala Phe
65                  70                  75                  80

Ala Met Leu Ser Leu Gly Ala Lys Gly Asp Thr His Thr Gln Val Leu
                85                  90                  95

Glu Gly Leu Lys Phe Asn Leu Thr Glu Thr Ala Glu Ala Gln Ile His
            100                 105                 110

Asp Gly Phe Arg His Leu Leu His Thr Val Asn Arg Pro Asp Ser Glu
        115                 120                 125

Leu Gln Leu Ala Ala Gly Asn Ala Leu Val Val Ser Glu Asn Leu Lys
    130                 135                 140

Leu Gln His Lys Phe Leu Glu Asp Ala Lys Asn Leu Tyr Gln Ser Glu
```

```
145                 150                 155                 160

Ala Phe Leu Val Asp Phe Arg Asp Pro Glu Gln Ala Lys Thr Lys Ile
                165                 170                 175

Asn Ser His Val Glu Lys Gly Thr Arg Gly Lys Ile Val Asp Leu Val
            180                 185                 190

Gln Glu Leu Asp Ala Arg Thr Leu Leu Ala Leu Val Asn Tyr Val Phe
        195                 200                 205

Phe Lys Gly Lys Trp Glu Lys Pro Phe Glu Pro Glu Asn Thr Lys Glu
    210                 215                 220

Glu Asp Phe His Val Asp Ala Thr Thr Thr Val Arg Val Pro Met Met
225                 230                 235                 240

Ser Arg Leu Gly Met Tyr Val Met Phe His Cys Ser Thr Leu Ala Ser
                245                 250                 255

Thr Val Val Leu Met Asp Tyr Lys Gly Asn Ala Thr Ala Leu Phe Leu
            260                 265                 270

Leu Pro Asp Glu Gly Lys Leu Gln His Leu Glu His Thr Leu Thr Thr
        275                 280                 285

Glu Leu Ile Ala Lys Phe Leu Ala Lys Ser Ser Phe Arg Ser Val Thr
    290                 295                 300

Val Arg Phe Pro Lys Leu Ser Ile Ser Gly Thr Tyr Asp Leu Lys Pro
305                 310                 315                 320

Leu Leu Gly Lys Leu Gly Ile Thr Gln Val Phe Ser Asp Asn Ala Asp
                325                 330                 335

Leu Ser Gly Ile Thr Glu Gln Glu Ala Leu Lys Val Ser Gln Ala Leu
            340                 345                 350

His Lys Val Val Leu Thr Ile Asp Glu Arg Gly Thr Glu Ala Ala Gly
        355                 360                 365

Ala Thr Phe Val Glu Tyr Val Leu Tyr Ser Met Pro Gln Arg Val Thr
    370                 375                 380

Phe Asp Arg Pro Phe Leu Phe Val Ile Tyr Ser His Glu Val Lys Ser
385                 390                 395                 400

Pro Leu Phe Val Gly Lys Val Val Asp Pro Thr Gln His
                405                 410
```

<210> 27
<211> 391
<212> PRT
<213> Artificial

<220>
<223> Consensus Sequence

<400> 27

```
Met Pro Ser Ile Ser Gly Leu Leu Leu Leu Ala Gly Leu Cys Cys Leu
1               5                  10                  15

Val Pro Ser Phe Leu Ala Glu Asp Gln Glu Thr Asp Ser His Asp Gln
            20                  25                  30

Asp Pro Ala Cys His Lys Ile Ala Pro Asn Leu Ala Asp Phe Ala Phe
        35                  40                  45

Ser Leu Tyr Arg Glu Leu Ala His Gln Ser Asn Thr Thr Asn Ile Phe
    50                  55                  60

Phe Ser Pro Val Ser Ile Ala Thr Ala Phe Ala Met Leu Ser Leu Gly
65                  70                  75                  80

Thr Lys Gly Asp Thr His Thr Gln Ile Leu Glu Gly Leu Phe Asn Leu
                85                  90                  95

Thr Glu Thr Ala Glu Ala Glu Ile His Lys Gly Phe Gln His Leu Leu
            100                 105                 110

Thr Leu Asn Arg Pro Asp Ser Glu Leu Gln Leu Thr Thr Gly Asn Gly
        115                 120                 125

Leu Phe Ile Ser Glu Leu Lys Leu Val Asp Lys Phe Leu Glu Asp Val
    130                 135                 140

Lys Asn Leu Tyr His Ser Glu Ala Phe Ser Val Asn Phe Asp Ser Glu
145                 150                 155                 160

Glu Ala Lys Lys Ile Asn Asp Phe Val Glu Lys Gly Thr Gln Gly Lys
                165                 170                 175

Ile Val Asp Leu Val Lys Glu Leu Asp Lys Asp Thr Val Leu Ala Leu
            180                 185                 190

Val Asn Tyr Ile Phe Phe Lys Gly Lys Trp Glu Lys Pro Phe Glu Val
        195                 200                 205

Glu Asn Thr Glu Glu Asp Phe His Val Asp Thr Thr Thr Val Lys Val
```

210 215 220

Pro Met Met Ser Arg Leu Gly Met Phe Asp Val His His Cys Ser Thr
225 230 235 240

Leu Ser Ser Trp Val Leu Leu Met Asp Tyr Leu Gly Asn Ala Thr Ala
245 250 255

Ile Phe Ile Leu Pro Asp Asp Gly Lys Leu Gln His Leu Glu Gln Thr
260 265 270

Leu Asn Glu Leu Ile Ala Lys Phe Leu Asn Arg Arg Ser Ala Ser Leu
275 280 285

His Leu Pro Lys Leu Ser Ile Ser Gly Thr Tyr Asp Leu Lys Thr Leu
290 295 300

Leu Gly Leu Gly Ile Thr Arg Val Phe Ser Asn Gly Ala Asp Leu Ser
305 310 315 320

Gly Ile Thr Glu Glu Pro Leu Lys Leu Ser Lys Ala Val His Lys Ala
325 330 335

Val Leu Thr Ile Asp Glu Lys Gly Thr Glu Ala Ala Gly Ala Thr Phe
340 345 350

Leu Glu Ala Ile Pro Met Ser Met Pro Pro Glu Val Phe Asn Arg Pro
355 360 365

Phe Leu Phe Ile Ile Tyr Asp Asn Thr Lys Ser Pro Leu Phe Val Gly
370 375 380

Lys Val Val Asp Pro Thr Gln
385 390

<210> 28
<211> 98
<212> PRT
<213> Mus musculus

<400> 28

Met Pro Thr Glu Thr Glu Arg Cys Ile Glu Ser Leu Ile Ala Val Phe
1 5 10 15

Gln Lys Tyr Ser Gly Lys Asp Gly Asn Asn Thr Gln Leu Ser Lys Thr
20 25 30

Glu Phe Leu Ser Phe Met Asn Thr Glu Leu Ala Ala Phe Thr Lys Asn
35 40 45

```
Gln Lys Asp Pro Gly Val Leu Asp Arg Met Met Lys Lys Leu Asp Leu
    50                  55                  60

Asn Cys Asp Gly Gln Leu Asp Phe Gln Glu Phe Leu Asn Leu Ile Gly
65                  70                  75                  80

Gly Leu Ala Ile Ala Cys His Asp Ser Phe Ile Gln Thr Ser Gln Lys
                85                  90                  95

Arg Ile
```

<210> 29
<211> 90
<212> PRT
<213> Canis familiaris

<400> 29

```
Thr Arg Ser Leu Ile Ala Val Phe Gln Lys Phe Ala Gly Lys Glu Gly
1               5                   10                  15

Asn Asn Cys Thr Leu Ser Lys Thr Glu Phe Leu Thr Phe Met Asn Thr
            20                  25                  30

Glu Leu Ala Ala Phe Thr Lys Asn Gln Lys Asp Pro Gly Val Leu Asp
        35                  40                  45

Arg Met Met Lys Lys Leu Asp Leu Asn Ser Asp Gly Gln Leu Asp Phe
    50                  55                  60

Gln Glu Phe Leu Asn Leu Ile Gly Gly Met Ala Ile Ala Cys His Asp
65                  70                  75                  80

Ser Phe Thr Arg Ser Pro His Phe Arg Lys
                85                  90
```

<210> 30
<211> 61
<212> PRT
<213> Oryctolagus cuniculus

<400> 30

```
Phe Ala Val Phe Gln Lys Tyr Ala Gly Lys Asp Gly His Ser Val Thr
1               5                   10                  15

Leu Ser Lys Thr Glu Phe Leu Ser Phe Met Asn Thr Glu Leu Ala Ala
            20                  25                  30

Phe Thr Lys Asn Gln Lys Asp Pro Gly Val Leu Asp Arg Met Met Lys
        35                  40                  45
```

Lys Leu Asp Leu Asn Ser Asp Gly Gln Leu Asp Phe Gln
50 55 60

<210> 31
<211> 93
<212> PRT
<213> Homo sapiens

<400> 31

Met Leu Thr Glu Leu Glu Lys Ala Leu Asn Ser Ile Ile Asp Val Tyr
1 5 10 15

His Lys Tyr Ser Leu Ile Lys Gly Asn Phe His Ala Val Tyr Arg Asp
20 25 30

Asp Leu Lys Lys Leu Leu Glu Thr Glu Cys Pro Gln Tyr Ile Arg Lys
35 40 45

Lys Gly Ala Asp Val Trp Phe Lys Glu Leu Asp Ile Asn Thr Asp Gly
50 55 60

Ala Val Asn Phe Gln Glu Phe Leu Ile Leu Val Ile Lys Met Gly Val
65 70 75 80

Ala Ala His Lys Lys Ser His Glu Glu Ser His Lys Glu
85 90

<210> 32
<211> 89
<212> PRT
<213> Rattus norvegicus

<400> 32

Met Ala Thr Glu Leu Glu Lys Ala Leu Ser Asn Val Ile Glu Val Tyr
1 5 10 15

His Asn Tyr Ser Gly Ile Lys Gly Asn His His Ala Leu Tyr Arg Asp
20 25 30

Asp Phe Arg Lys Met Val Thr Thr Glu Cys Pro Gln Phe Val Gln Asn
35 40 45

Lys Asn Thr Glu Ser Leu Phe Lys Glu Leu Asp Val Asn Ser Asp Asn
50 55 60

Ala Ile Asn Phe Glu Glu Phe Leu Ala Leu Val Ile Arg Val Gly Val
65 70 75 80

Ala Ala His Lys Asp Ser His Lys Glu

<210> 33
<211> 99
<212> PRT
<213> Sus scrofa

<400> 33

Met Ala Lys Arg Pro Thr Glu Thr Glu Arg Cys Ile Glu Ser Leu Ile
1 5 10 15

Ala Ile Phe Gln Lys His Ala Gly Arg Asp Gly Asn Asn Thr Lys Ile
20 25 30

Ser Lys Thr Glu Phe Leu Ile Phe Met Asn Thr Glu Leu Ala Ala Phe
35 40 45

Thr Gln Asn Gln Lys Asp Pro Gly Val Leu Asp Arg Met Met Lys Lys
50 55 60

Leu Asp Leu Asp Ser Asp Gly Gln Leu Asp Phe Gln Glu Phe Leu Asn
65 70 75 80

Leu Ile Gly Gly Leu Ala Ile Ala Cys His Asp Ser Phe Ile Lys Ser
85 90 95

Thr Gln Lys

<210> 34
<211> 88
<212> PRT
<213> Artificial

<220>
<223> Consensus Sequence

<400> 34

Met Thr Glu Glu Lys Ile Ser Leu Ile Ala Val Phe Gln Lys Tyr Ala
1 5 10 15

Gly Lys Asp Gly Asn Asn Leu Ser Lys Thr Glu Phe Leu Ser Phe Met
20 25 30

Asn Thr Glu Leu Ala Ala Phe Thr Lys Asn Gln Lys Asp Pro Gly Val
35 40 45

Leu Asp Arg Met Met Lys Lys Leu Asp Leu Asn Ser Asp Gly Gln Leu
50 55 60

Asp Phe Gln Glu Phe Leu Asn Leu Ile Gly Gly Leu Ala Ile Ala Cys

65 70 75 80

His Asp Ser Phe Lys Ser Ser Lys
85